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MAY 24 2001

GROUP 1700

DATE: Thursday, May 24, 2001
TO: Examiner Kevin Kruer
COMPANY: USPTO
FAX #: 703 872 9310
FROM: Gary R. Plotecher
TOTAL # OF PAGES:

COMMENTS:

Examiner Kruer,

Further to our conversation of earlier today, attached to this facsimile is the Response filed today May 24, 2001 along with the Petition for Extension of Time.

Gary R. Plotecher

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

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MAY 24 2001

GROUP 1700

In re Application of : Wei-Kuo Lee, et al.
Serial No. : 09/311,480
Filing Date : May 13, 1999
For : CABLE SEMICONDUCTING SHIELD
Group Art Unit : 1773
Examiner : Kruer, K
Attorney Docket No.: D-17965

CERTIFICATION UNDER 37 CFR 1.8(a) and 1.10

I hereby certify that, on the date shown below, this correspondence is being:

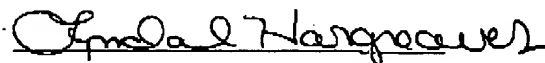
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- ☐ deposited with the United States Postal Service in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231
37 CFR 1.8(a)
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Transmission

- ☒ transmitted by facsimile to Fax No.: 703 872 9310 addressed to Examiner Kruer at the U.S. Patent and Trademark Office.

Date: May 24, 2001



Assistant Commissioner for Patents
Washington, D.C. 20231

RESPONSE UNDER 37 C.F.R. §1.111

Sir:

Please amend the claims as shown in the attached replacement sheets submitted in accordance with 37 C.F.R. §1.121(c). The amendments are illustrated by the attached redline version, and they are explained in the following remarks.

Claims 1-9 are rejected under 35 U.S.C. §112, second paragraph, as indefinite. Specifically, Claims 1, 7 and 9 are rejected for the phrase "based on the weight of the

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copolymer or a silicone rubber". The Examiner argues that this phrase is unclear as to whether (a) the amount of acrylonitrile is based upon the copolymer or silicone rubber, or (b) the composition may optionally contain a nitrile rubber or a silicone rubber. Claims 1, 7 and 9 are amended with the insertions of romanettes (i) and (ii) to render clear that the phrase refers to the amount of acrylonitrile present in the copolymers.

Claims 3 and 7 are rejected for the phrase "and methacrylic acid esters wherein the ester is present in the copolymer in an amount of about 20 to about 55 percent by weight". The Examiner argues that the phrase is unclear as to whether it refers to (a) the amount of ester in the copolymer, or (b) the amount of ester present in the copolymer regardless of which copolymer is utilized. Claims 3 and 7 (and 9) are amended to render clear that the amount of about 20 to about 55 percent by weight refers to the amount of unsaturated ester in the ethylene/unsaturated ester copolymer.

Claim 7 is rejected because the preamble is unclear. The Examiner argues that the phrases "one or more" or "two or more" are repetitive, and that all embodiments of the invention have a "core". Claim 7 (and Claim 1) are amended to delete "of two or more electrical conductors or communications media" to render clear that the invention is drawn to a cable comprising one or more electrical conductors, communications media or cores.

Finally, Claim 10 is rejected for the lack of an antecedent basis for "of polymer". Claim 10 is amended to insert "the" before the second occurrence of "polymer" (line 4 of Claim 10) thus providing reference back to the first occurrence of "polymer" (which appears in line 1 of Claim 10).

Claims 1-2 and 4 are rejected under 35 U.S.C. §103(a) as obvious over applicants' admissions in view of Nahass et al. (USP 5,591,382). In brief, the Examiner argues that the applicants' admit to the general construction of a typical electrical power cable, and the use of carbon black in the composition of the semiconducting shield layer(s). The

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Examiner acknowledges that the applicants do not admit to the known use of carbon nanotubes as a substitute for carbon black, but the Examiner relies upon Nahass et al. for this teaching. Specifically, the Examiner argues that Nahass et al. teach that carbon fibrils have been used in place of carbon black in conductive compositions (although he does not argue that they have ever been used in semiconducting shield layers), and he thus concludes that the substitution of carbon fibrils for carbon black in the construction of semiconductor shield layers would have been obvious to one of ordinary skill in the art at the time the applicants made their invention. The applicants respectfully traverse.

The applicants first note that Claim 1 is amended at subparagraph (c) by the deletion of "optionally", and that Claim 8 is amended by the addition of subparagraph (c). As such, Claims 1 and 8 (and thus the claims that depend from these independent claims) require the presence of both carbon black and carbon nanotubes.

Second, nothing in Nahass et al. suggest the substitution of carbon nanotubes for carbon black in the preparation of semiconductor shield layers (and this assumes, *arguendo*, that carbon fibrils are synonymous with carbon nanotubes; this is not necessarily the case). More importantly, nothing in Nahass et al. suggest replacing some portion of the carbon black with carbon nanotubes in the preparation of a semiconductor shield layer. The difference is important, and this is shown in the examples of the present application.

The Examiner will note at page 18, Table 1, that Example 1 reports a composition of which 38 weight percent is carbon black. This table also reports in Example 4 in which the composition is 19 weight percent carbon black and 10 weight percent carbon nanotubes (for a total of 29 weight percent which, for purposes of these examples, is approximately the same as 38 weight percent).

The Examiner will also note that Table 1 reports the viscosity for both of these compositions, and the viscosity of the Example 1 composition (all carbon black) is

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significantly higher at various shear rates than the viscosity of the Example 4 composition. The lower viscosity of Example 4 is important to a more facile in the processing of the composition into a semiconductor shield layer. This lower viscosity is even more striking when compared against the composition of Example 2 which contains 20 weight percent carbon nanotubes and 0 weight percent carbon black. The viscosity of the composition of Example 2 is even greater across the various shear rates than that of the composition of Example 1.

In addition, at page 20, Table 2 of the specification, the volume resistivities of the compositions of Examples 1-4 are reported. The Examiner will note that not only is the volume resistivity of the composition of Example 4 comparable to that of the composition of Example 1, but it is much more stable over various thermal cycles than the volume resistivity of the Example 1 composition.

Neither of these properties, i.e., improve viscosity and volume resistivity, are discussed by Nahass et al., much less suggested as improved. Consequently, even if, *arguendo*, the Examiner has made a *prima facie* case of obviousness, these results are clearly rebutted. Accordingly, the Examiner is respectfully requested to reconsider this basis of rejection, and then to withdraw it.

Claims 1-4 are also rejected under 35 U.S.C. §103(a) as obvious over Ongchin (USP 4,286,023) in view of Nahass et al. The Examiner argues that Ongchin teaches an article of manufacture comprising one or more strands of a conducting metal or alloy, a layer of semiconductor shielding, a layer of insulation and a layer of strippable semiconductive composition. The Examiner acknowledges that Ongchin does not teach carbon fibrils as an additive to the semiconducting shield compositions, but argues that Nahass et al. make this suggestion. For the reasons stated above, i.e., Nahass et al. do not teach or suggest the use of a blend of carbon black and carbon nanotubes in semiconductor shield layers or the benefits that are available from the use such a blend.

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This basis of rejection is also traversed and the Examiner is respectfully requested to withdraw it.

Claims 5, 7 and 9 are rejected under 35 U.S.C. §103(a) as obvious over Ongchin in view of Nahass et al. as applied to Claims 1-4 above. For the same reasons as given above, this basis of rejection is traversed. Specifically with respect to the *prima facie* showing of obviousness, the Examiner is again requested to consider the data reported in Tables 1 and 2 of the specification. Here again, the Examiner is respectfully requested to reconsider this basis of rejection, and then to withdraw it.

Claims 1, 6, 8 and 10 are rejected under 35 U.S. C. §103(a) as obvious over Ongchin in view of Silver et al. (USP 4,317,001) and Nahass et al. Silver et al. are argued to teach an insulation layer for an electric cable having a stated volume resistivity, the layer comprising carbon black. Here too, the Examiner acknowledges that Ongchin and Silver do not teach the use of carbon fibrils as a conductive filler for an insulating layer, but believes that the suggestion lies in Nahass et al. Once again, this basis of rejection is traversed for the reasons stated above, and the Examiner respectfully requested to withdraw it.

Claims 1-4 are rejected under 35 U.S.C. §103(a) as obvious over Burns et al. (EP 0 420 271 A1) in view of Nahass et al. Burns et al. are argued to teach an insulated electrical conductor using one or more strands of a conducting metal or alloy with, among other things, a layer of semiconductive shielding. Once again, the Examiner acknowledges that Burns et al. do not teach that carbon fibrils may be added to the semiconducting shield composition, but he relies upon Nahass et al. for this teaching. Here too, this basis of rejection is traversed for the reasons stated above, and the Examiner respectfully requested to withdraw it.

Finally, Claims 5, 7 and 9 are rejected under 35 U.S.C. §103(a) as obvious over Burns et al. in view of Nahass et al. as applied to Claims 1-4 above. Once again, this

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basis of rejection is traversed for the reasons stated above, and the Examiner is respectfully requested to withdraw it.

The applicants have filed with this response a Petition for a Three Month Extension of Time.

Respectfully submitted,

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Registration No. 27,830

Dated: May 24, 2001

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